T A B L E S:

Table 1:

Savings in fuel consumption due to correctly inflated radial ply tires compared to over-inflated radial ply tires*.

Tillage Operation	Soil Conditions	24 psi (gal/acre)	Correct/Low (gal/acre)	Savings gal/acre	(%)
Disking	Untilled Capay clay soil with an average mc of 38.5% and a specific gravity of 1.21	1.75	1.43(1)	0.32	18.3
Disking	Tilled Capaycaly soil with an average mc of 35.9% and a specific gravity of 1.22.	1.35	1.08(1)	0.27	20.0
Chiseling	Stubble dished Ricon silty clay and Yolo silt loam soil with an average mc of 10.6% and a specific gravity of 1.59	2.82	2.65(2)	0.17	6.0

Table 2:

Improvement in productivity due to correctly inflated radial ply tire compared to over-inflated radial ply tire*.

Tillage Operation	Soil Conditions	24 psi (acre/h)	Correct/Low (acre/h)	Increase (acre/h)	(%)
Disking	Untilled Capay clay soil with an average mc of 38.5% and a specific gravity of 1.21	12.24	13.16(1)	0.92	7.5
Disking	Tilled Capaycaly soil with an average mc of 35.9% and a specific gravity of 1.22.	11.72	12.39(1)	0.67	5.7
Chiseling	Stubble dished Ricon silty clay and Yolo silt loam soil with an average mc of 10.6% and a specific gravity of 1.59	7.37	7.71(2)	0.34	4.6

** Tables 1 and 2*
mc = moisture content on a dry basis.
All tests were conducted with a 350 hp 4WD tractor (JD8870) equipped with 20.8R42 dulas on front and rear axles.
(1) 13 psi in the front tires and 11 psi in the rear tires (drawn implement)
(2) 13 psi in the front tires and 14 psi in the rear tires (mounted implement)

Source: Lancas, K.P., S. K. Upadhyaya, and M. Sime.1994. Traction and soil compaction due to low pressure tire. Unpublished report. Bio. and Agr. Eng. Dept., University of California, Davis, CA 95616.

Table 3:

Savings in fuel consumption and time due to correctly inflated compared to over-inflated radial ply tires in primary tillage operations employed in the production of processing tomato, rice and cotton in California.

	Tomato [1]	Rice [2]	Cotton [3]
Operations evaluated	Chisel(2x) + 1St Disc (lx) + 2ndDisc (2x)	Chisel(lx) + 1St Disc (lx) + 2ndDisc (2x)	Chisel(lx) + 1St Disc (lx) + 2ndDisc (3x)
Savings in Fuel[4]:			
a) Gallon/acre	1.74	1.03	1.30
b) Gallon/ section*	1,114	659	832
c) Dollar/section**	$ 791	$ 468	$ 591
Savings in Time[4]:			
a) Hours/acre	0. 063	0.027	0.031
b) Hours/section	40.27	17.28	19.84
c) Dollar/section	$ 376	$ 57	$ 113
Total Savings: Dollar/section	$ 1,167	$ 525	$ 704

[1]Source: STRANGE, M. et al. 1992. Sample costs to produce processing tomatoes in the San Joaquin valley. UC Cooperative Extension, University of California.
[2]Source: WILLIANS, J. et al. 1992. Sample cost to produce rice. UC Cooperative Extension, University of California.
[3]Source: KERBY, T. et al. 1992. Sample costs to produce 40 inch row cotton in the San Joaquin valley. UC Cooperative Extension, University of California.
[4]See Tables 1 and 2 and Sources (2), (3), and (4).
**One section is equal to 640 acres*
***Diesel: assumed price: $ 0.71 / gal.*

Table 4:

Potential savings for California in fuel consumption and time due to correctly inflated compared to over-inflated radial ply tires in primary tillage operations employed in the production of processing tomato, rice and cotton.

	Tomato [2]	Rice [3]	Cotton [4]	Total
Area harvested in California[1], acres	240,000	392,000	1,105,000	1,737,000
Savings in Fuel[5]:				
Gallons	417,600	403,800	1,436,500	2,257,900
Dollars*	$ 296,500	$ 286,700	$ 1,019,900	1,6 03,100
Savings in times:				
Total hours	15,101	10, 580	34,260	59,941
Dollars**	$ 140,900	$ 34,900	$ 195,700	$ 371,500
Total savings: [Fuel and time]	$ 437,400	$321,600	$ 1,215,600	$ 1,974,600

[1]Source:California Statistical Abstracts, 1993, and California Agriculture, Statistical Review, 1992.
[2]Source: STRANGE, M. et al. 1992. Sample costs to produce processing tomatoes in the San Joaquin valley. UC Cooperative Extension, University of California.
[3]Source: WILLIANS, J. et al. 1992. Sample cost to produce rice. UC Cooperative Extension, University of California.
[4]Source: KERBY, T. et al. 1992. Sample costs to produce 40 inch row cotton in the San Joaquin valley. UC Cooperative Extension, University of California.
[5] See Tables 1 and 2 and Sources (2), (3), and (4).
** Diesel: assumed price: $ 0.71 / gal.*

** See (2), (3), and (4) for cost per hour (calculated for each operation)*

Implications of Tire Inflation Pressure on Soil Compaction

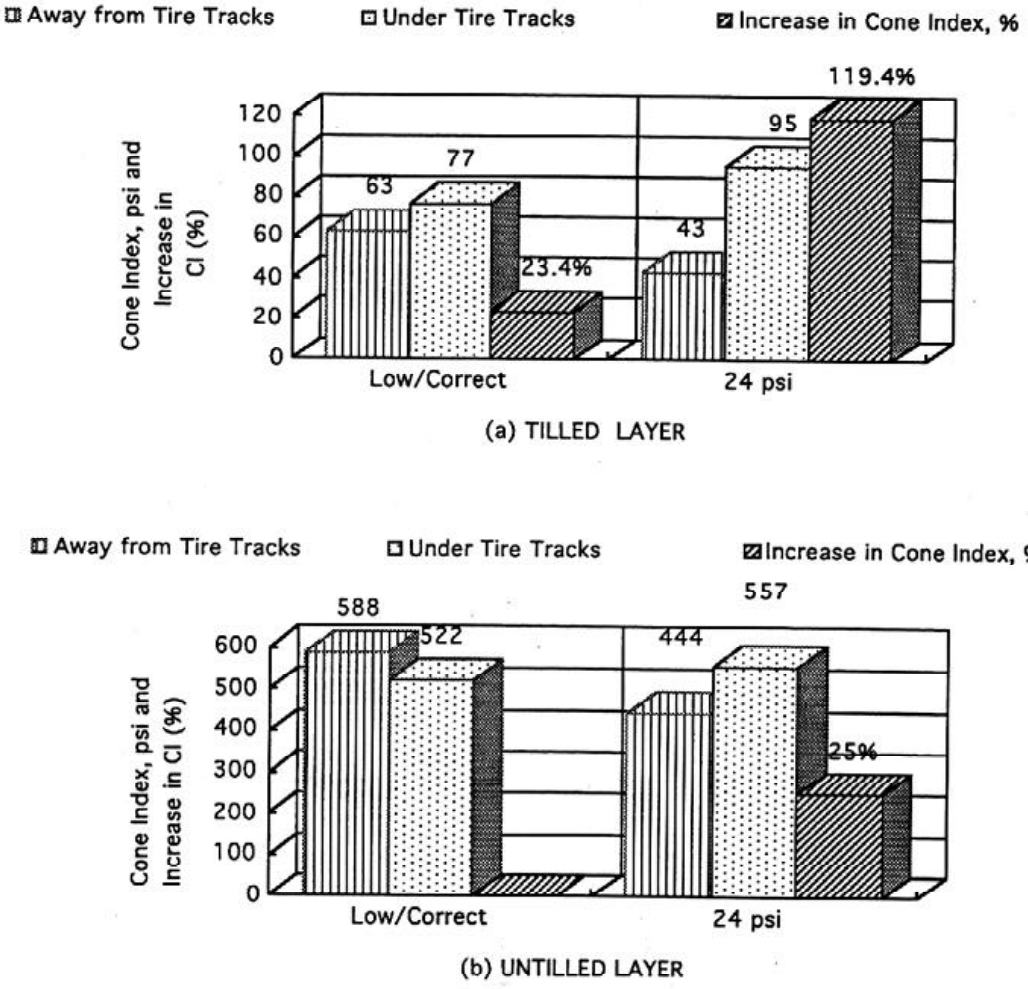

Figure 1 : Comparision of soil compaction (cone index values*) for low/correct and high inflation pressure (24 psi) tires in tire tracks and away from tire tracks in a stubble disked field containing Ricon silty clay and Yolo silt loam soil at a mean moisture of 10.6% and a specific gravity of 1.59. All tests were conducted using a JD 8870 tractor equipped with 20.8R42 duals on front and rear axles.

* Cone index is a standard measure of soil hardness or soil compaction.

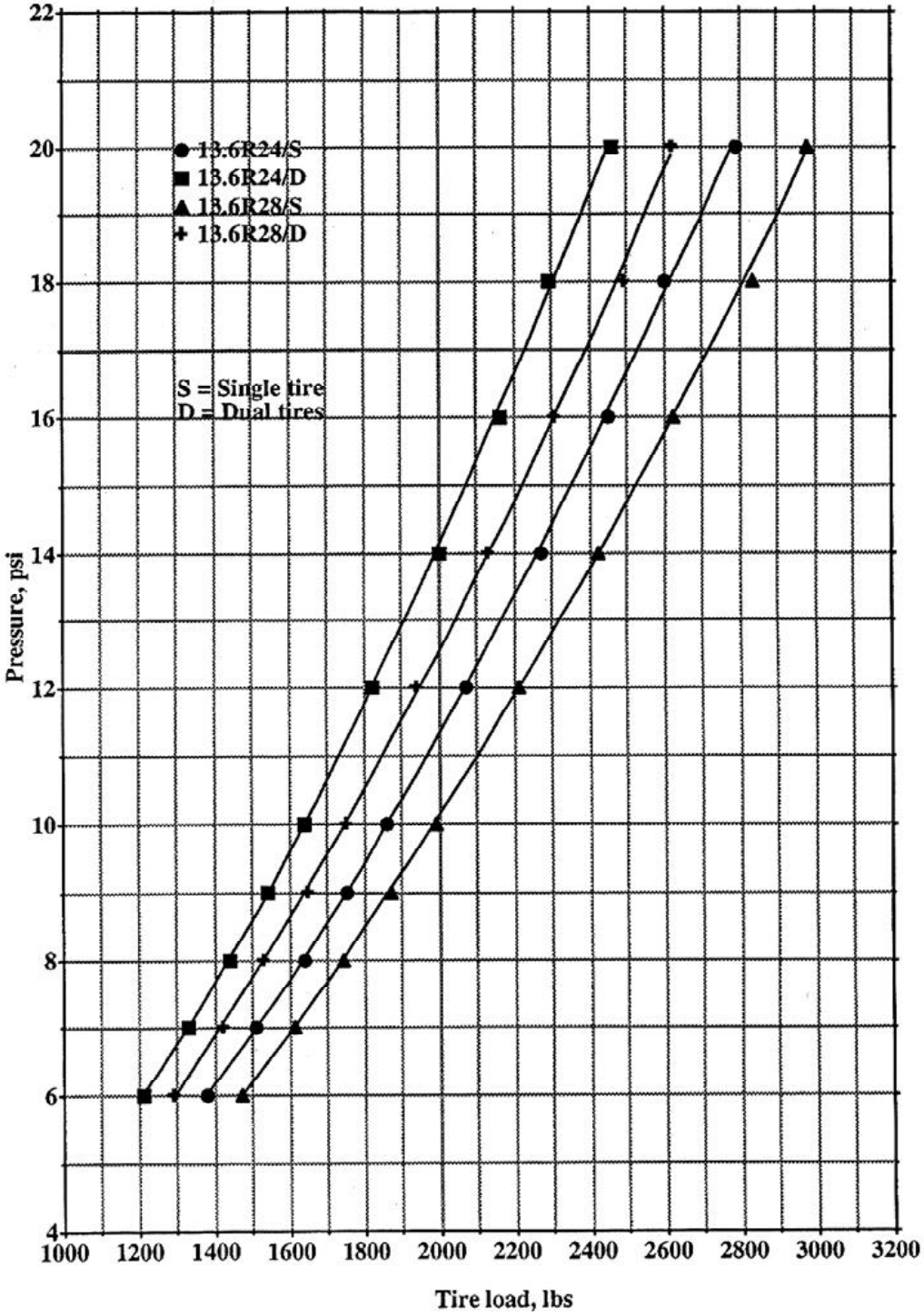

Figure 2. Correct/low pressure selection chart for 13.6R24 and 13.6R28 tires

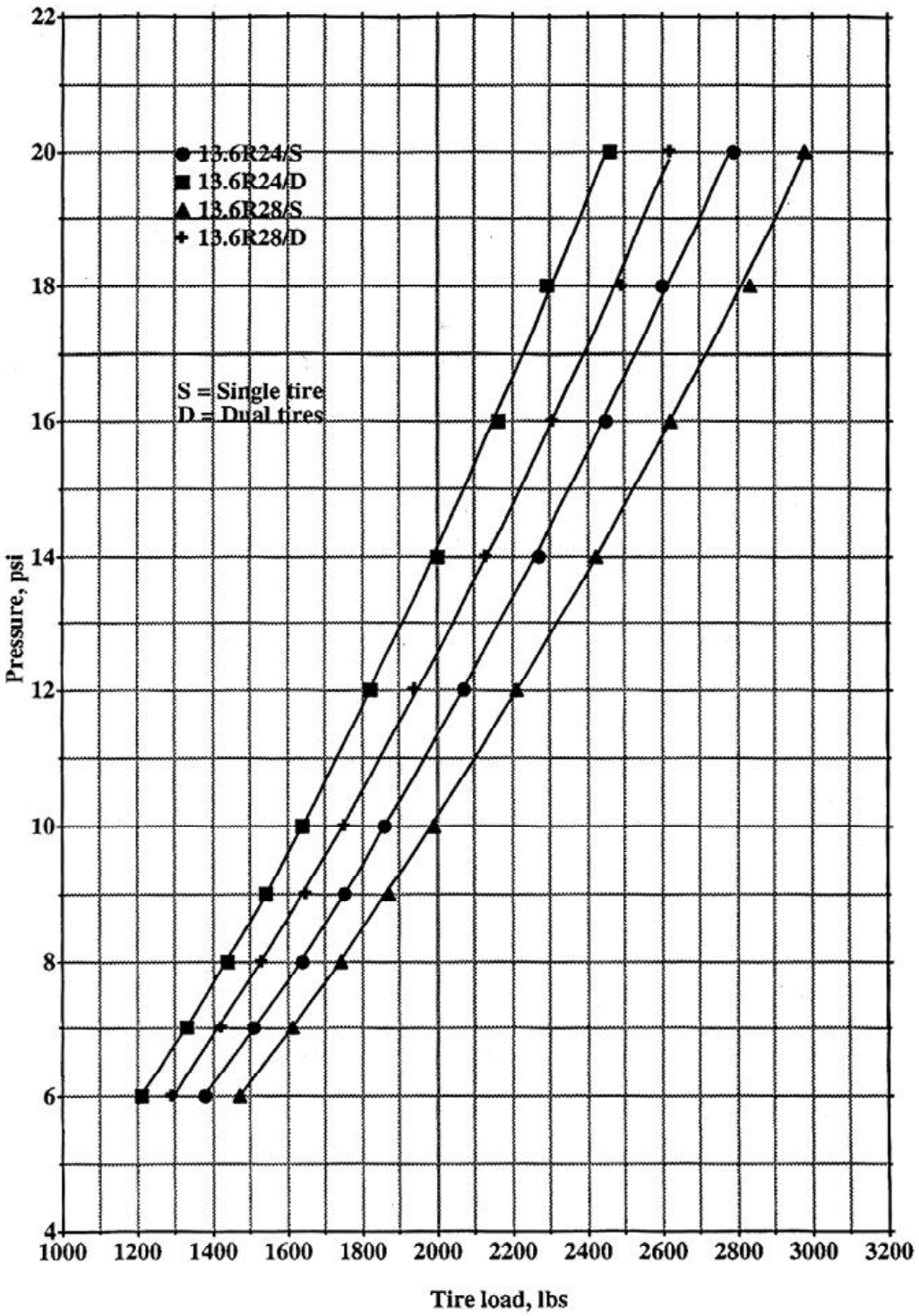

Figure 2. Correct/low pressure selection chart for 13.6R24 and 13.6R28 tires

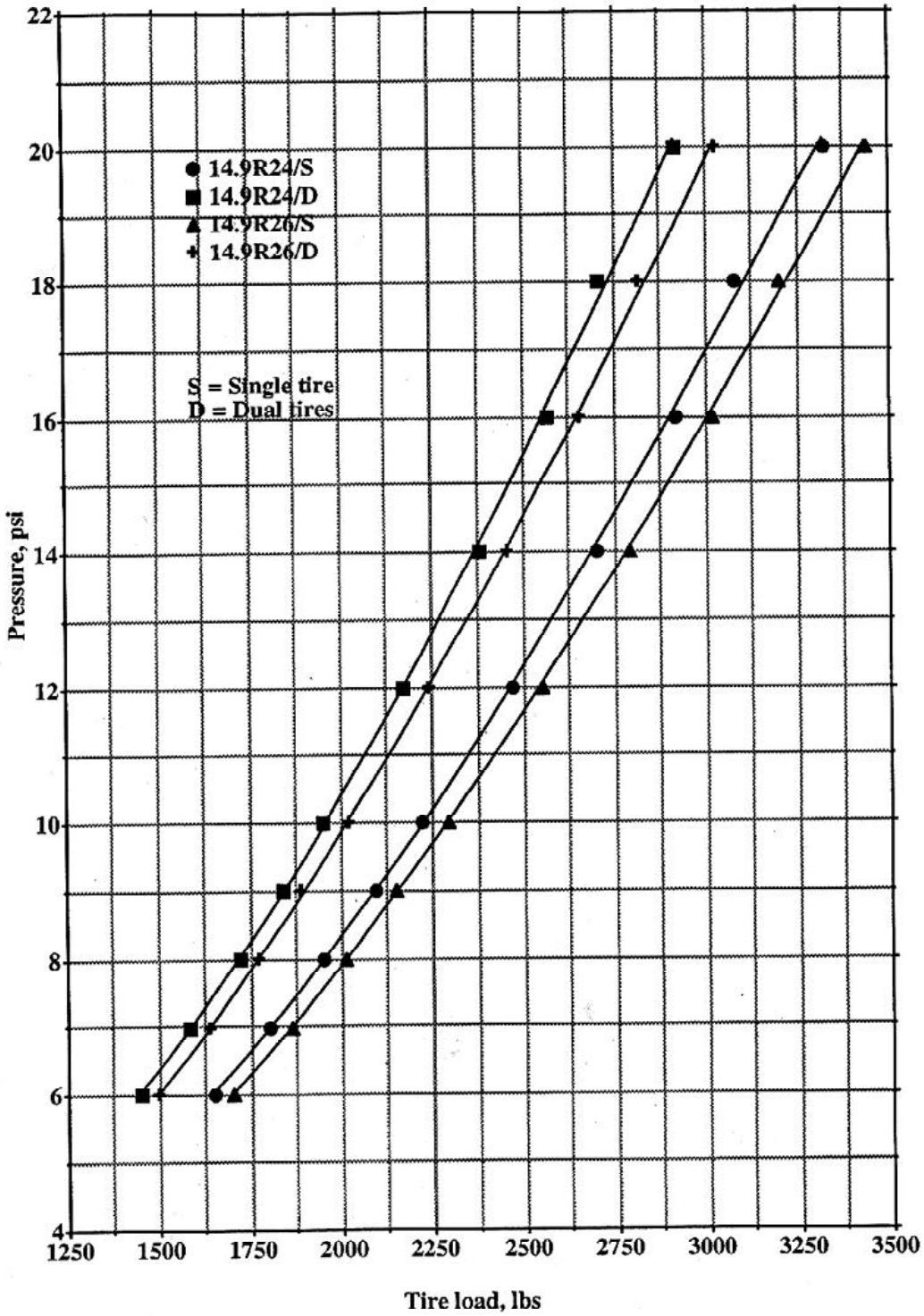

Figure 3. Correct/low pressure selection chart for 14.9R24 and 14.9R26 tires

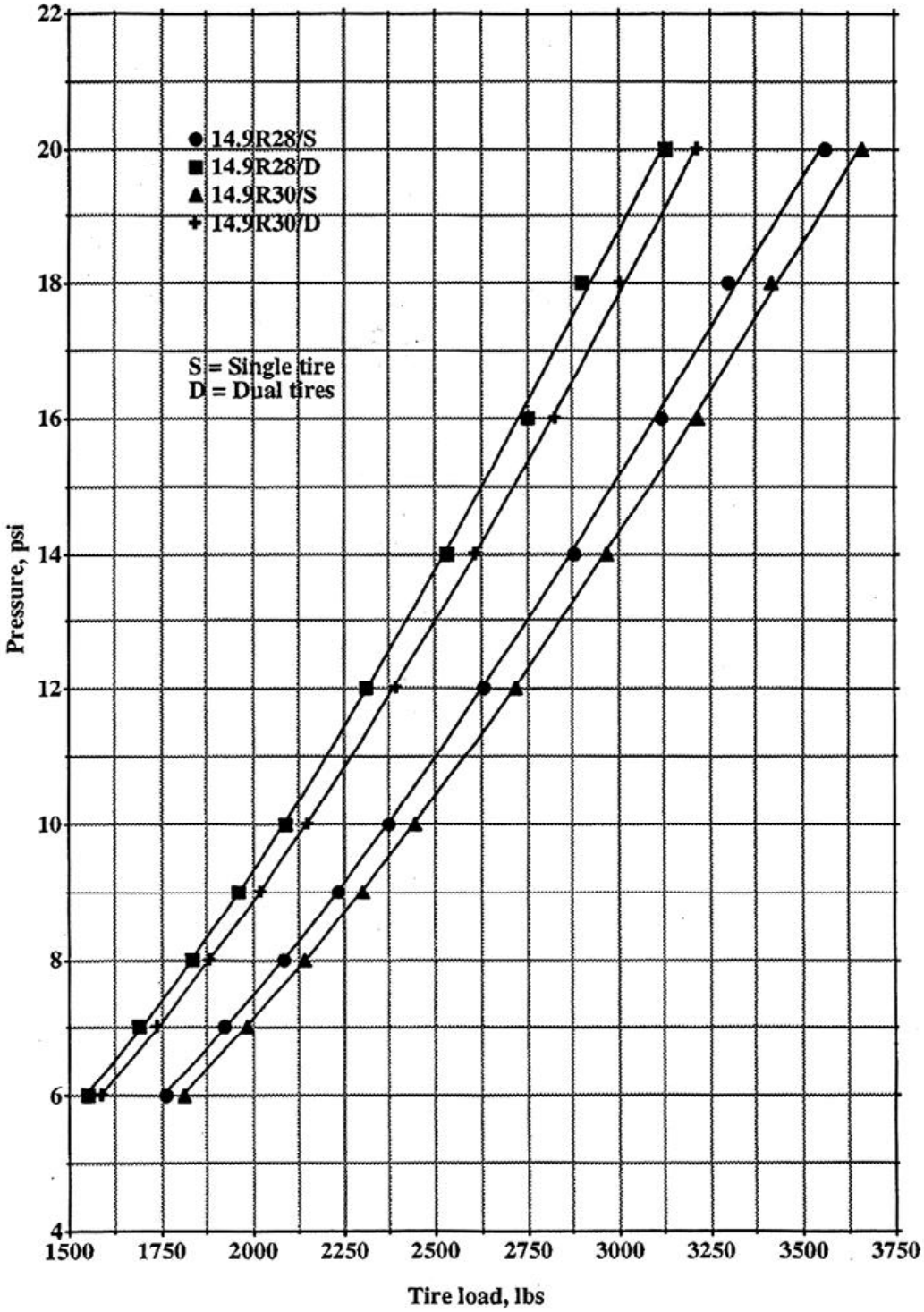

Figure 4. Correct/low pressure selection chart for 14.9R28 and 14.9R30 tires

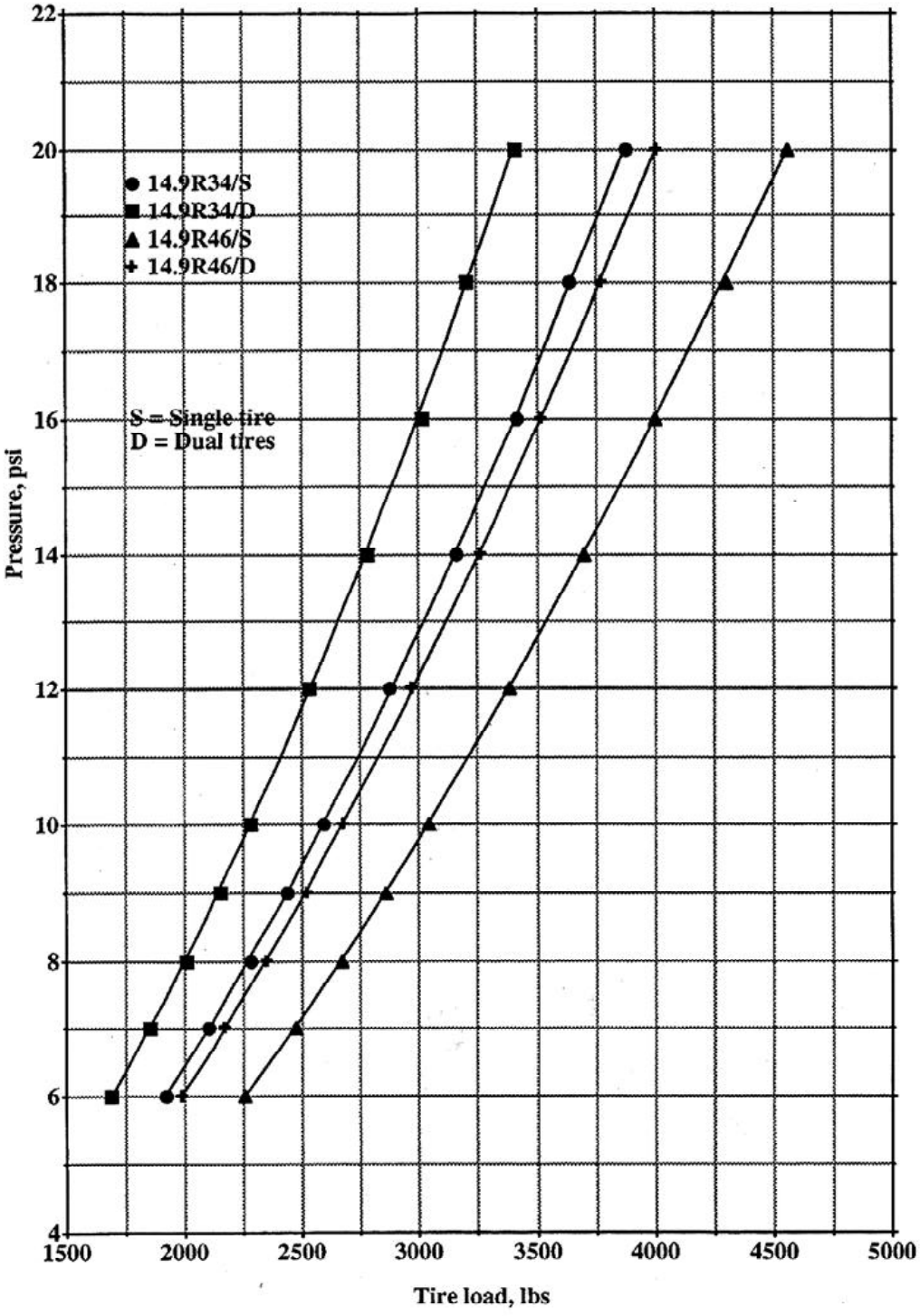

Figure 5. Correct/low pressure selection chart for 14.9R34 and 14.9R46 tires

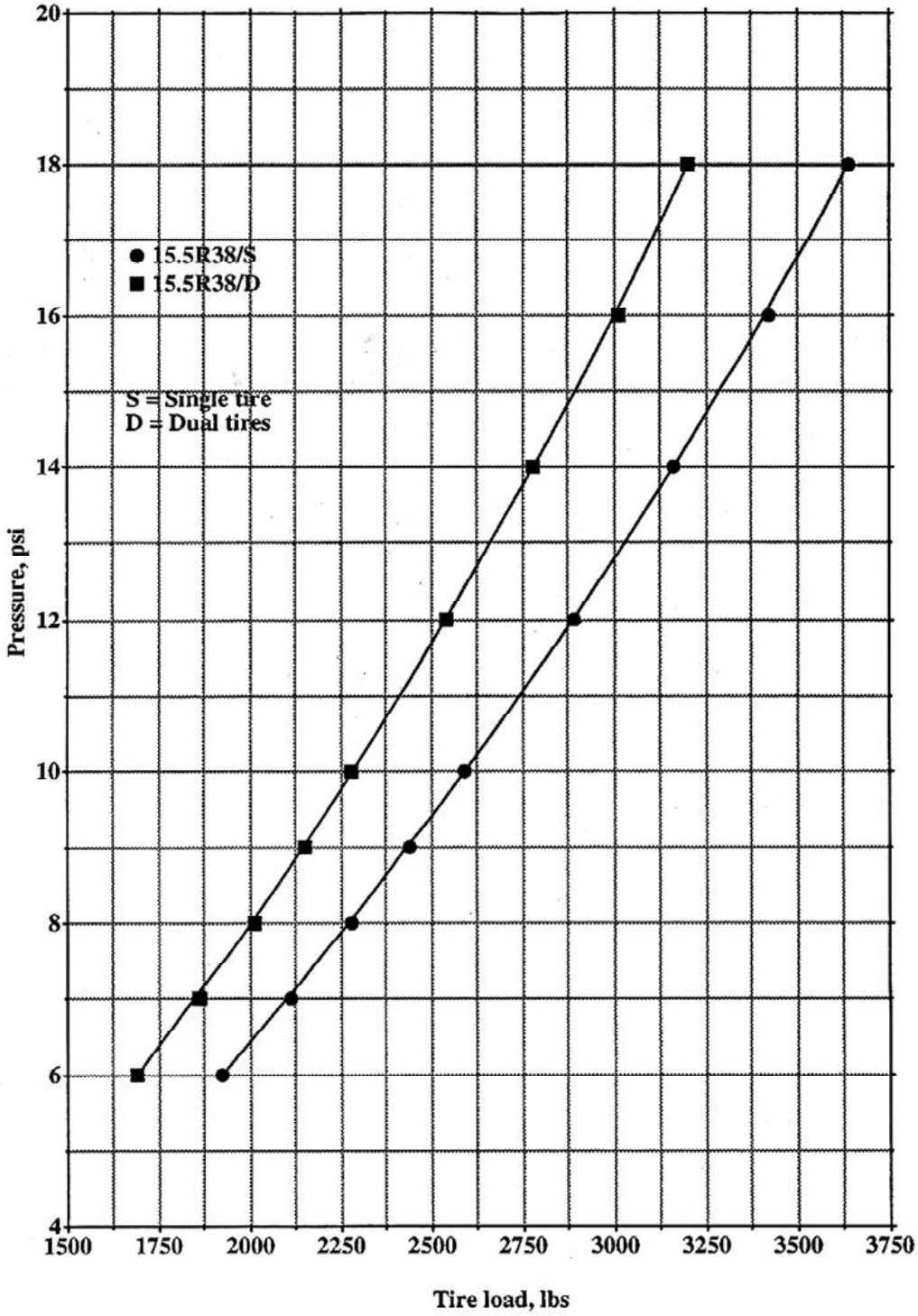

Figure 6. Correct/low pressure selection chart for 15.5R38 tires

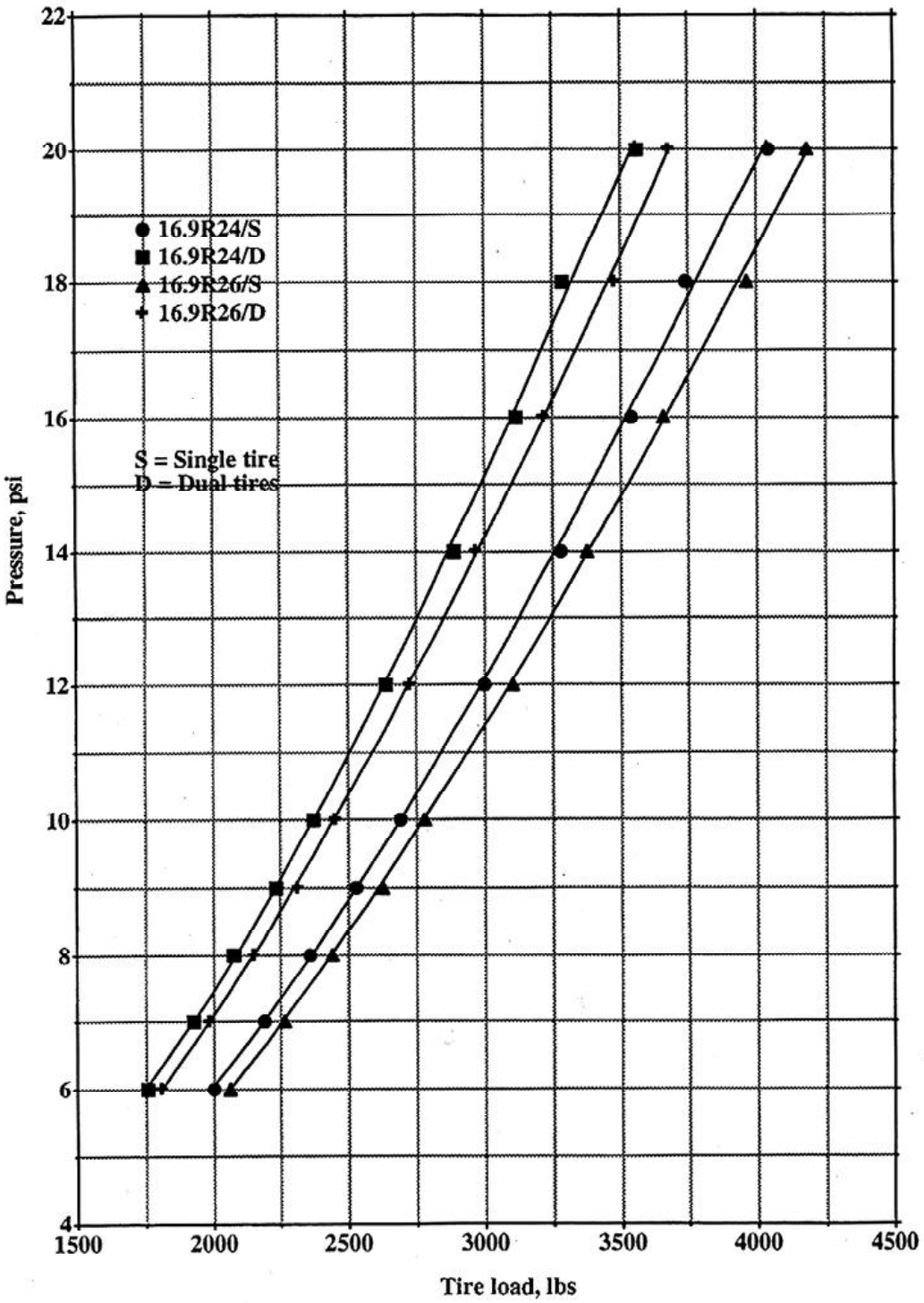

Figure 7. Correct/low pressure selection chart for 16.9R24 and 16.9R26 tires

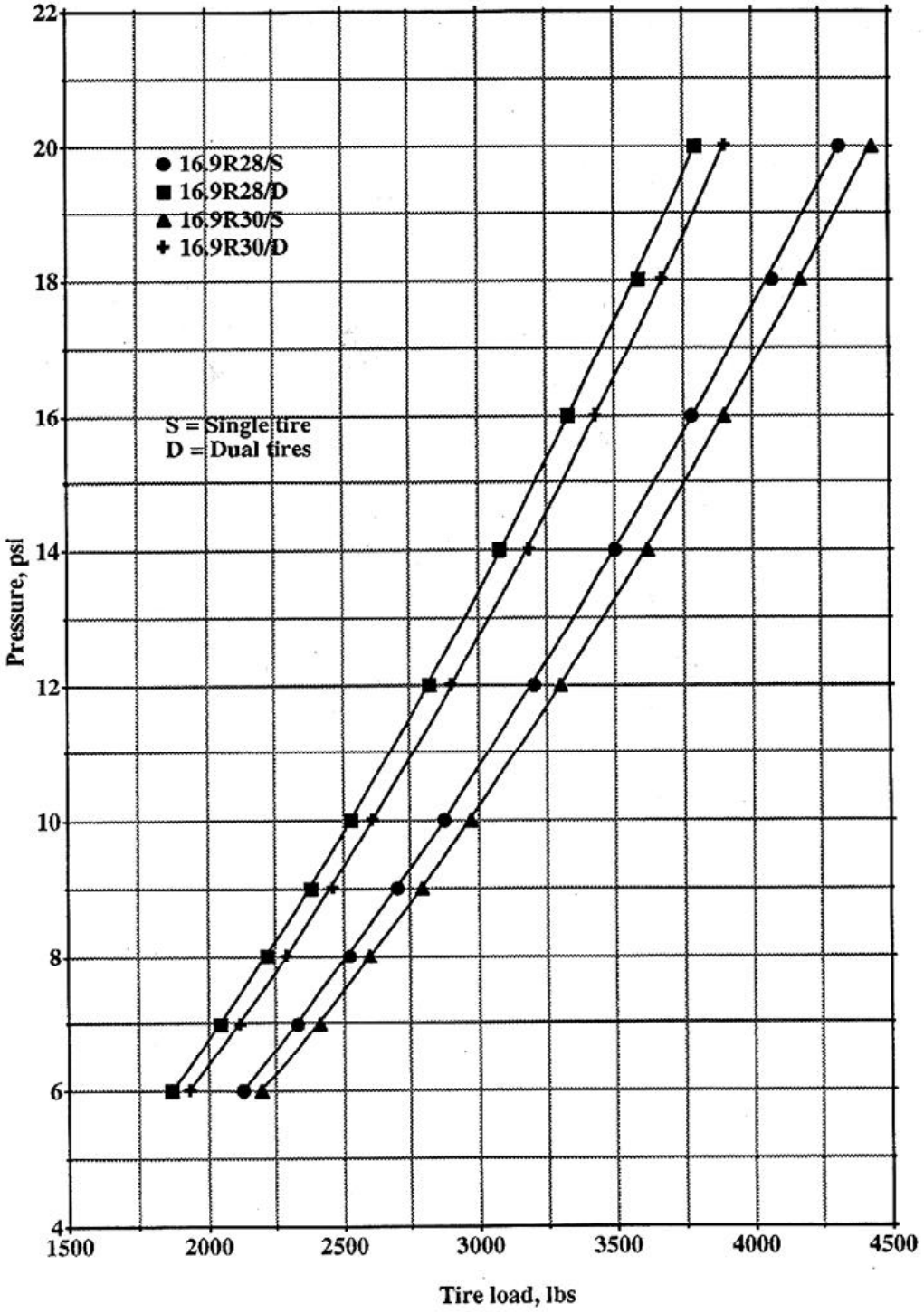

Figure 8. Correct/low pressure selection chart for 16.9R28 and 16.9R30 tires

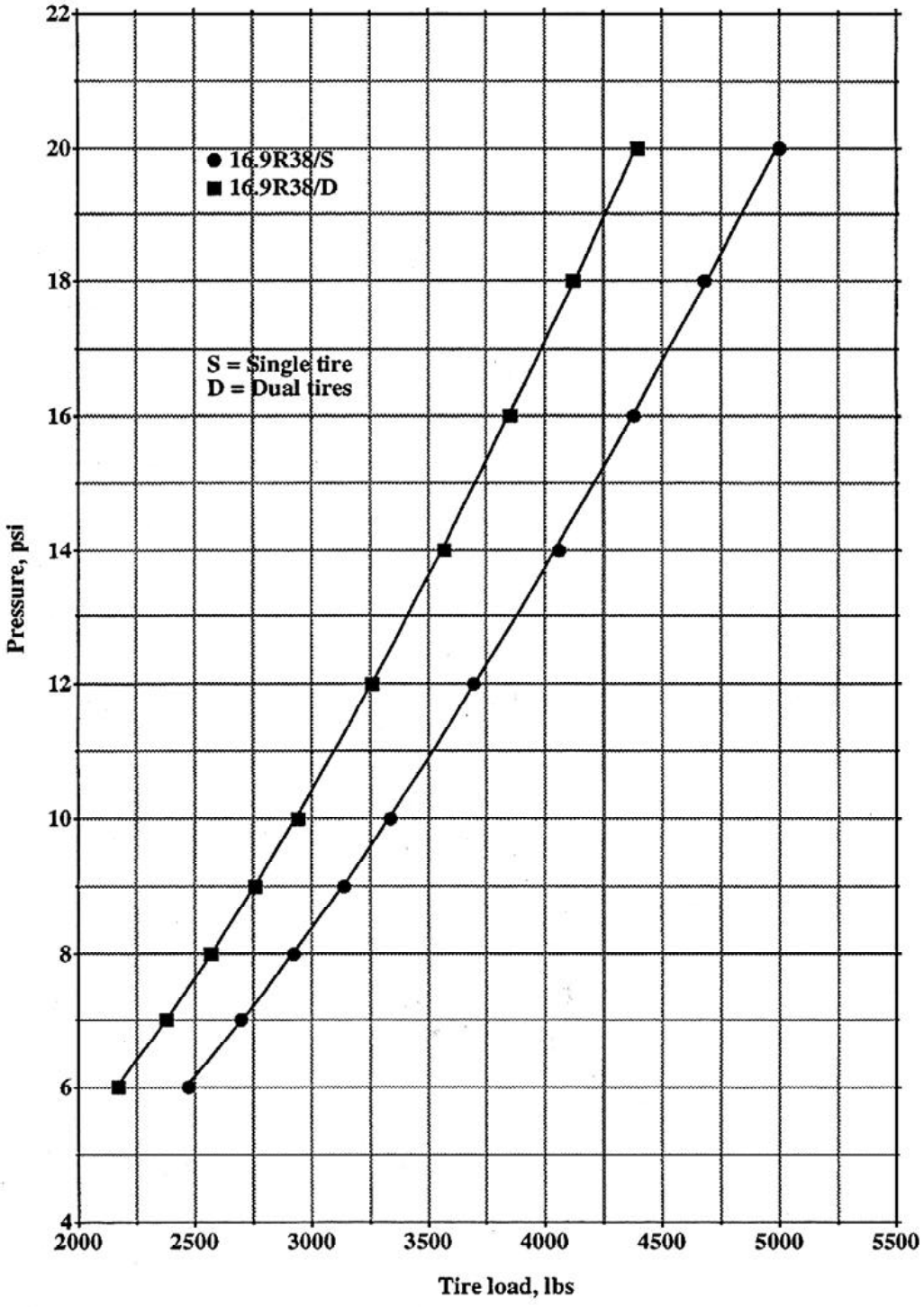

Figure 9. Correct/low pressure selection chart for 16.9R38 tires

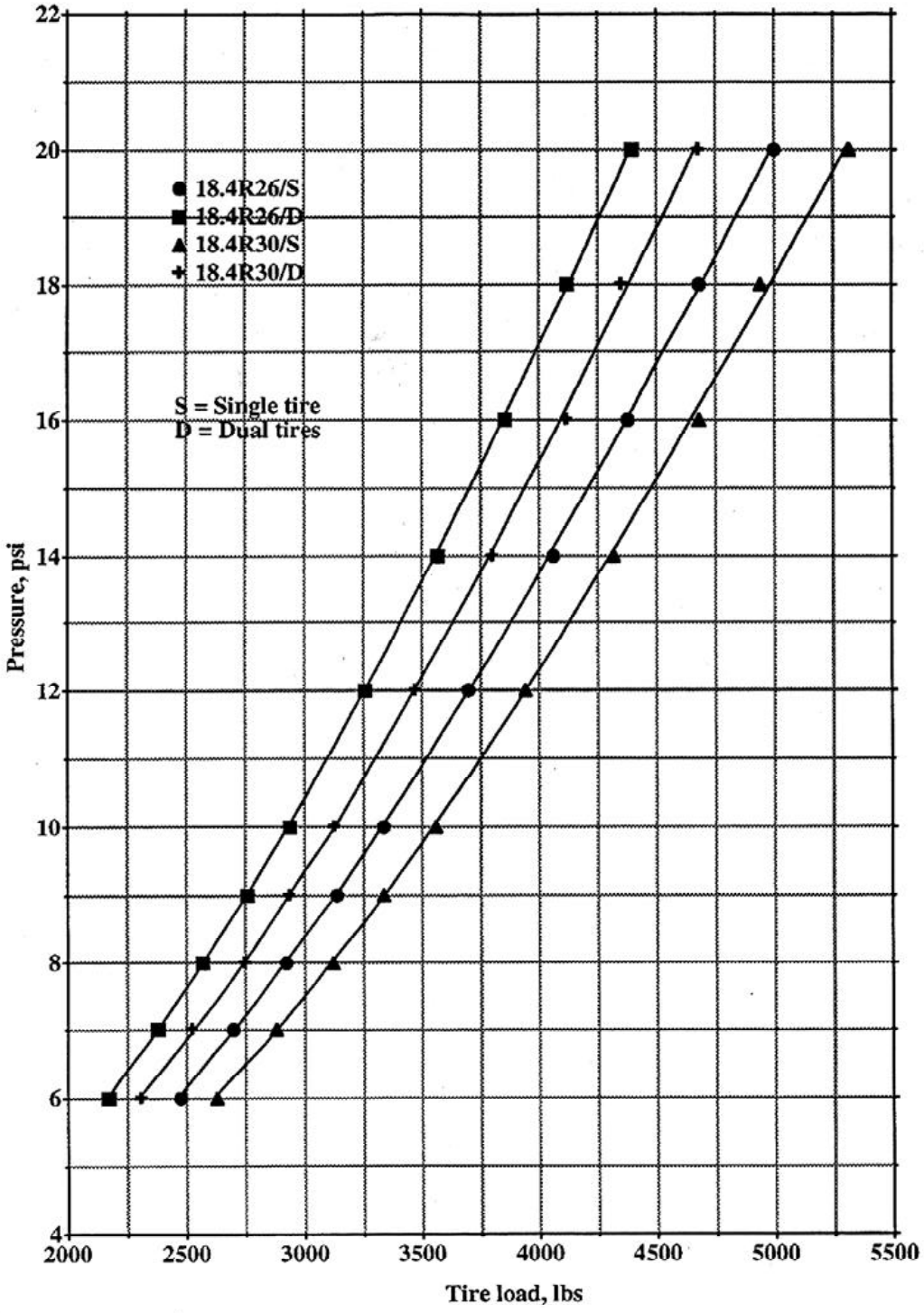

Figure 10. Correct/low pressure selection chart for 18.4R26 and 18.4R30 tires

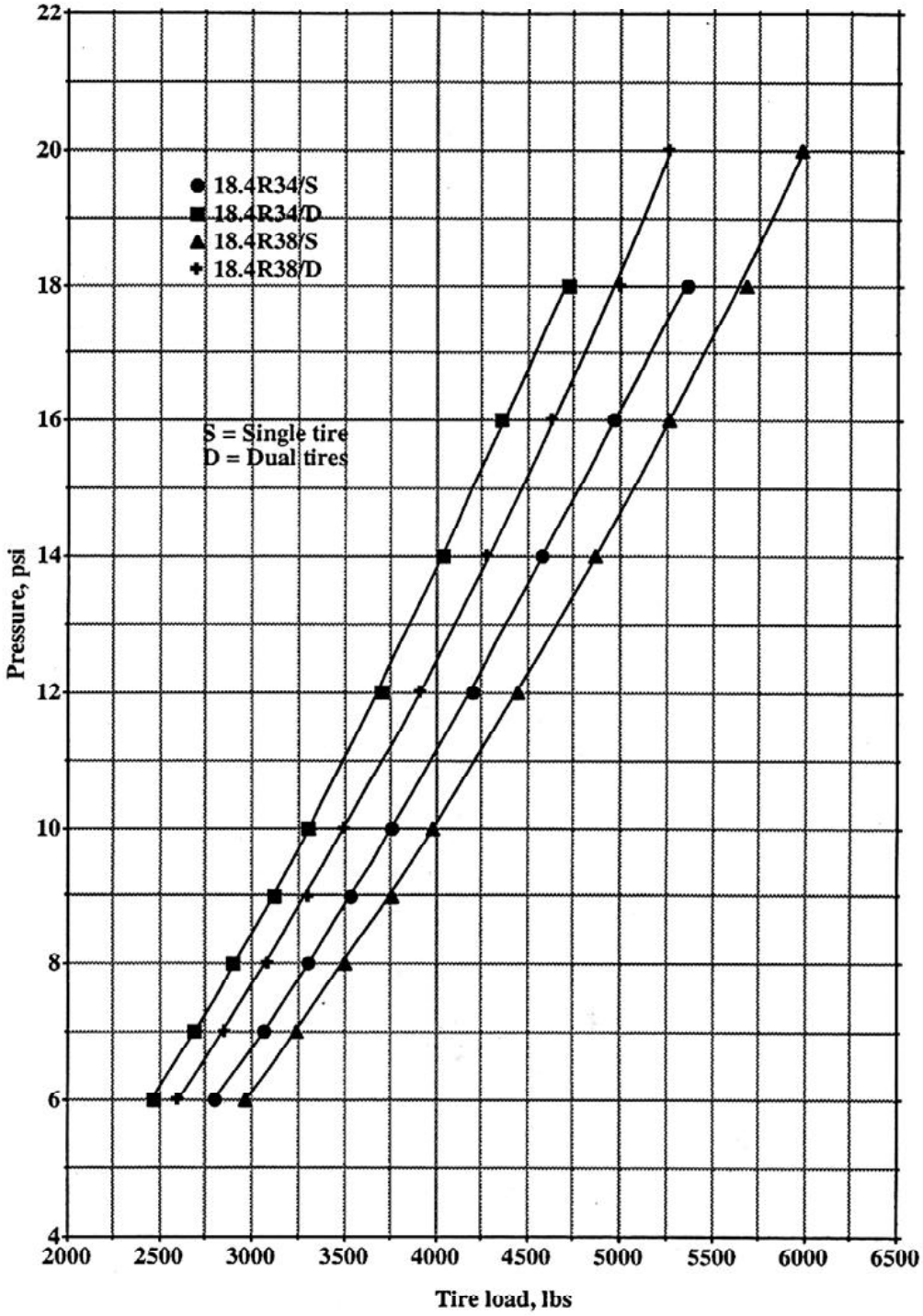

Figure 11. Correct/low pressure selection chart for 18.4R34 and 18.4R38 tires

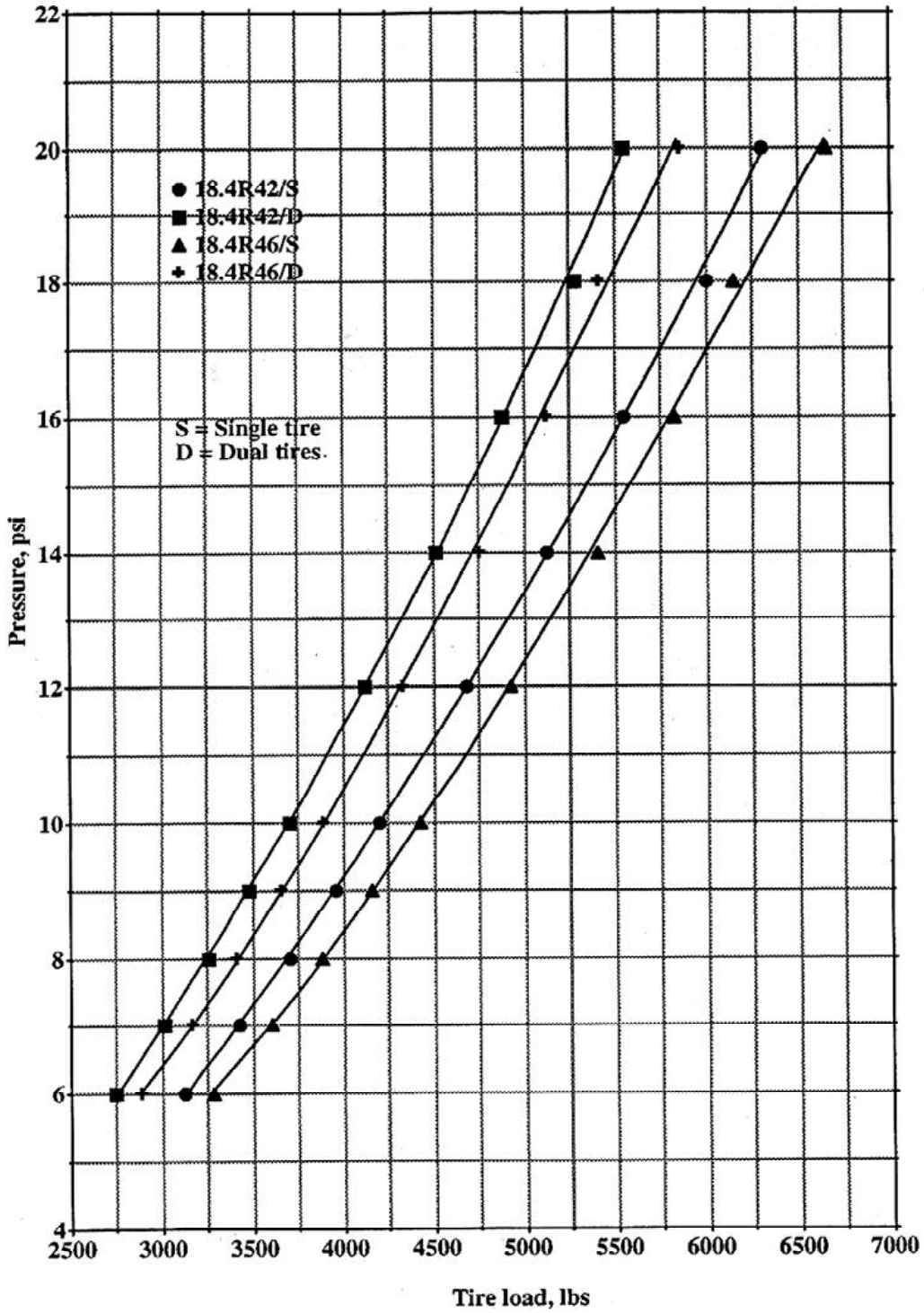

Figure 12. Correct/low pressure selection chart for 18.4R42 and 18.4R46 tires

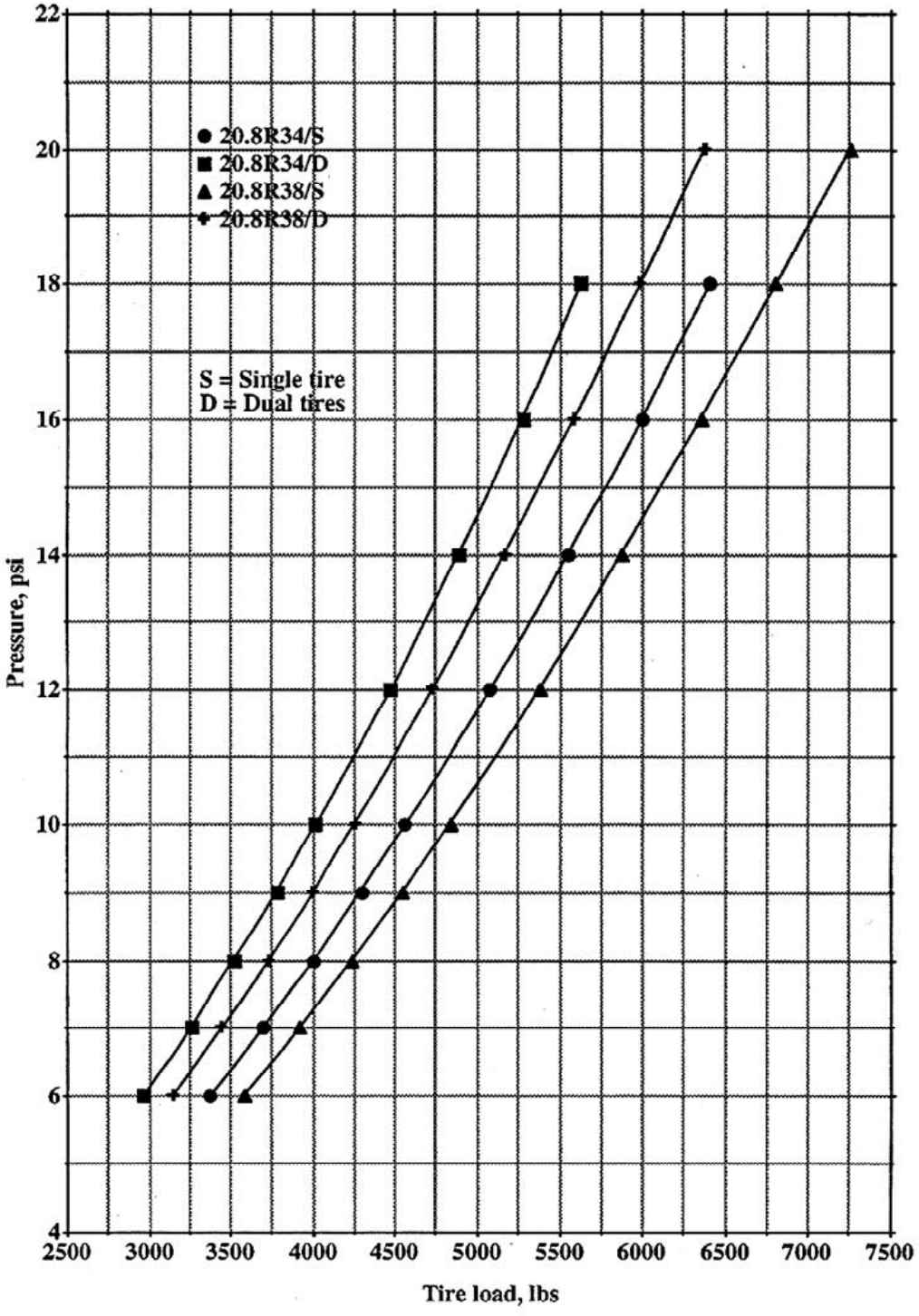

Figure 13. Correct/low pressure selection chart for 20.8R34 and 20.8R38 tires

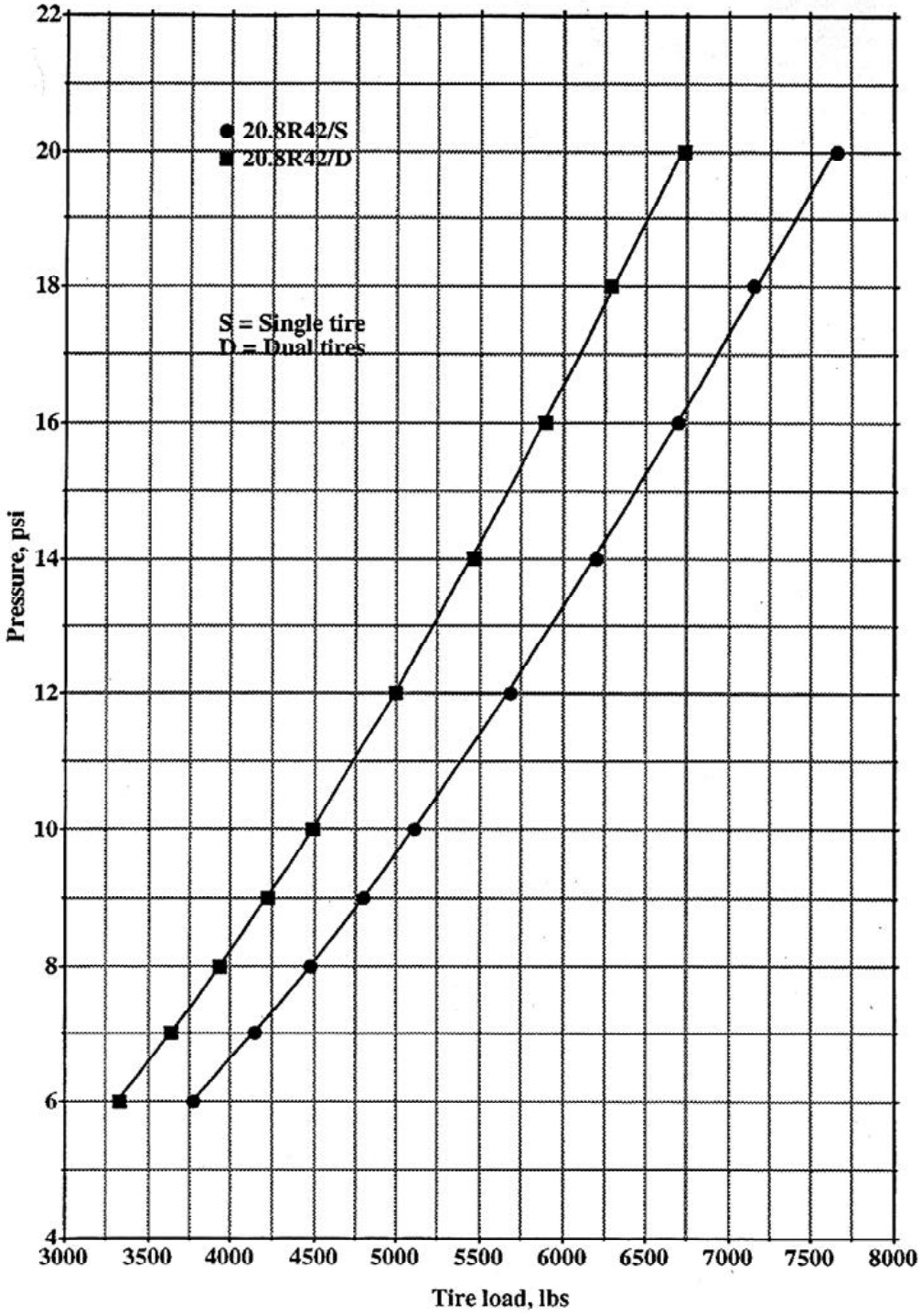

Figure 14. Correct/low pressure selection chart for 20.8R42 tire

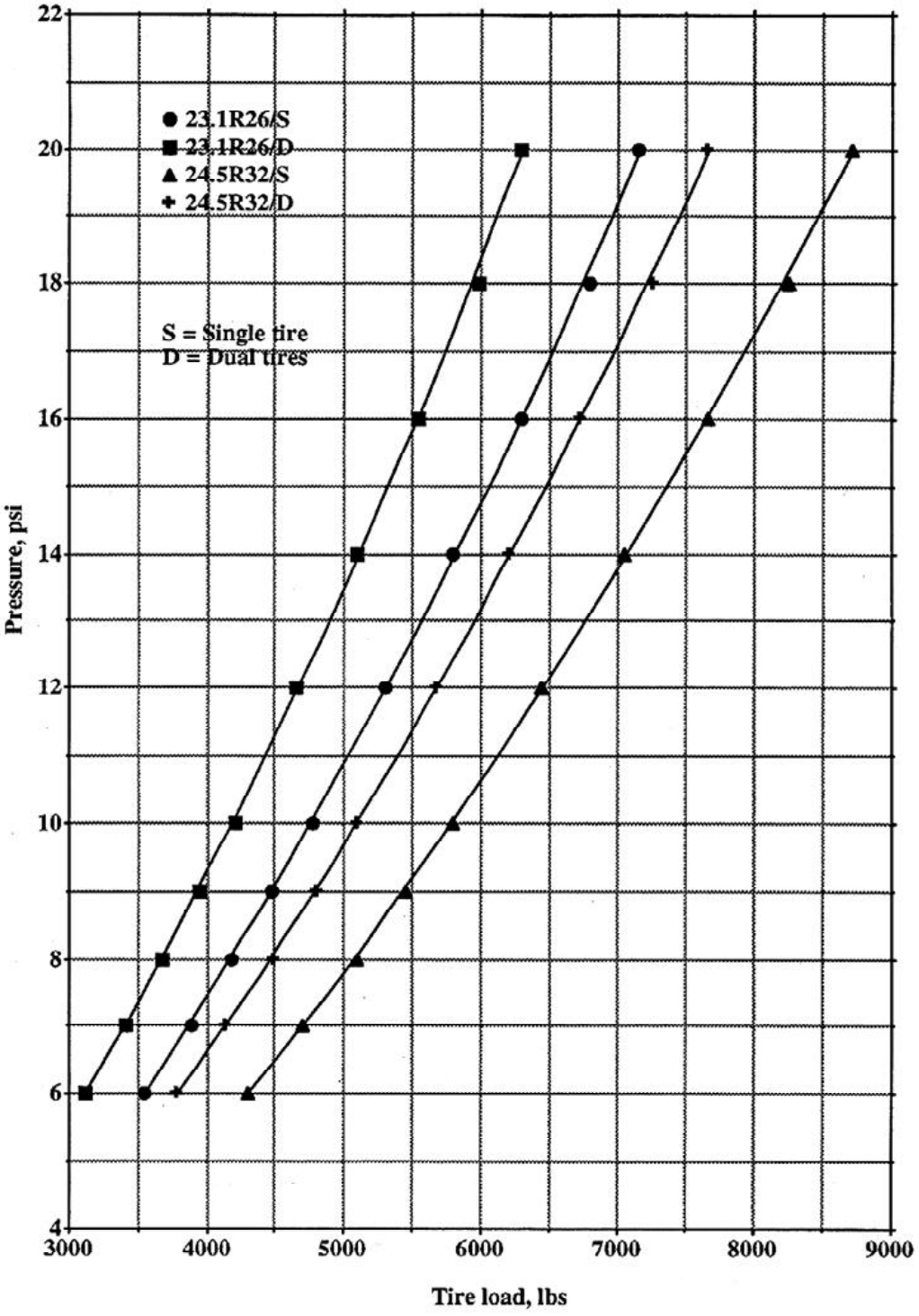

Figure 15. Correct/low pressure selection chart for 23.1R26 and 24.5R32 tires

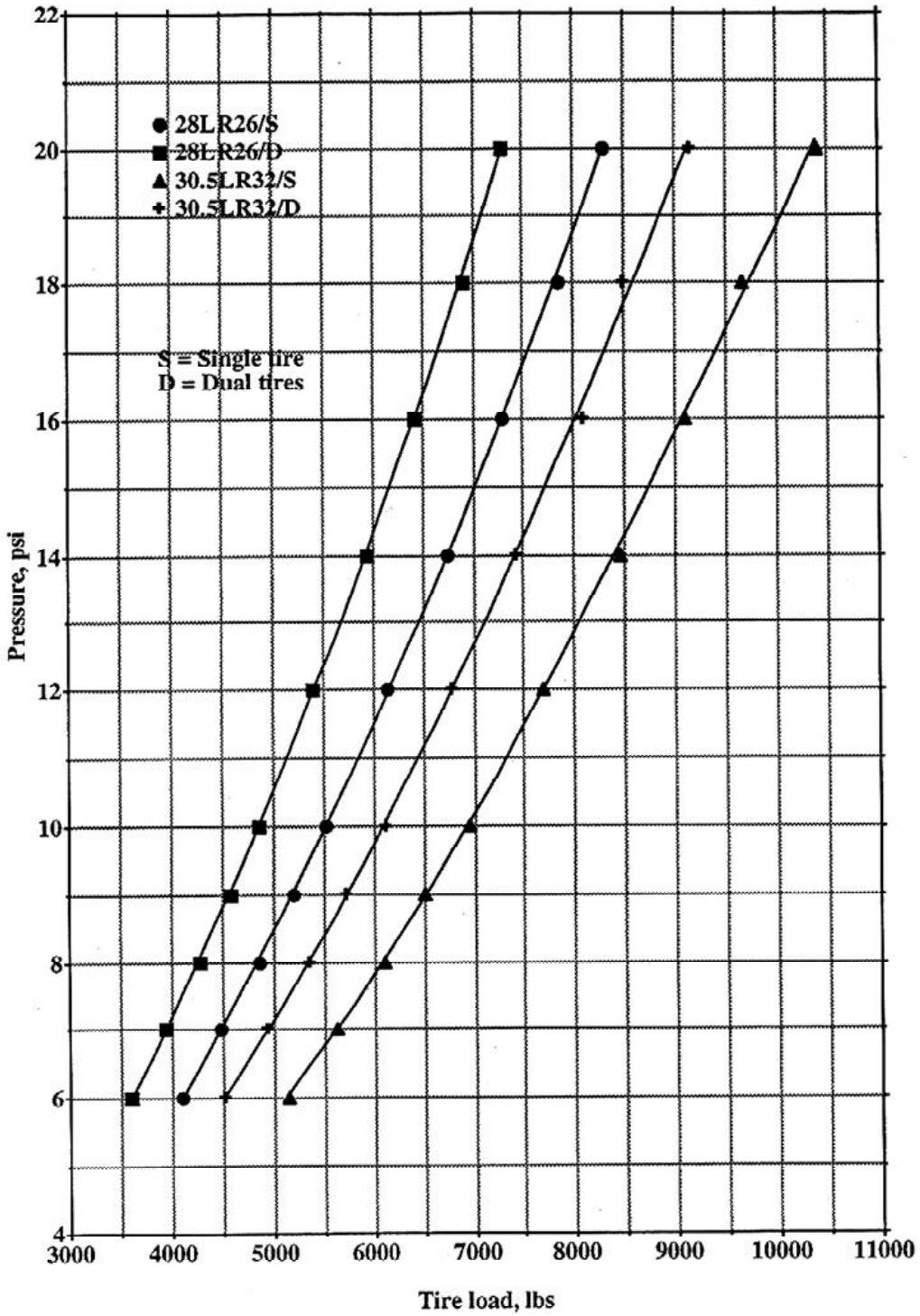

Figure 16. Correct/low pressure selection chart for 28LR26 and 30.5LR32 tires

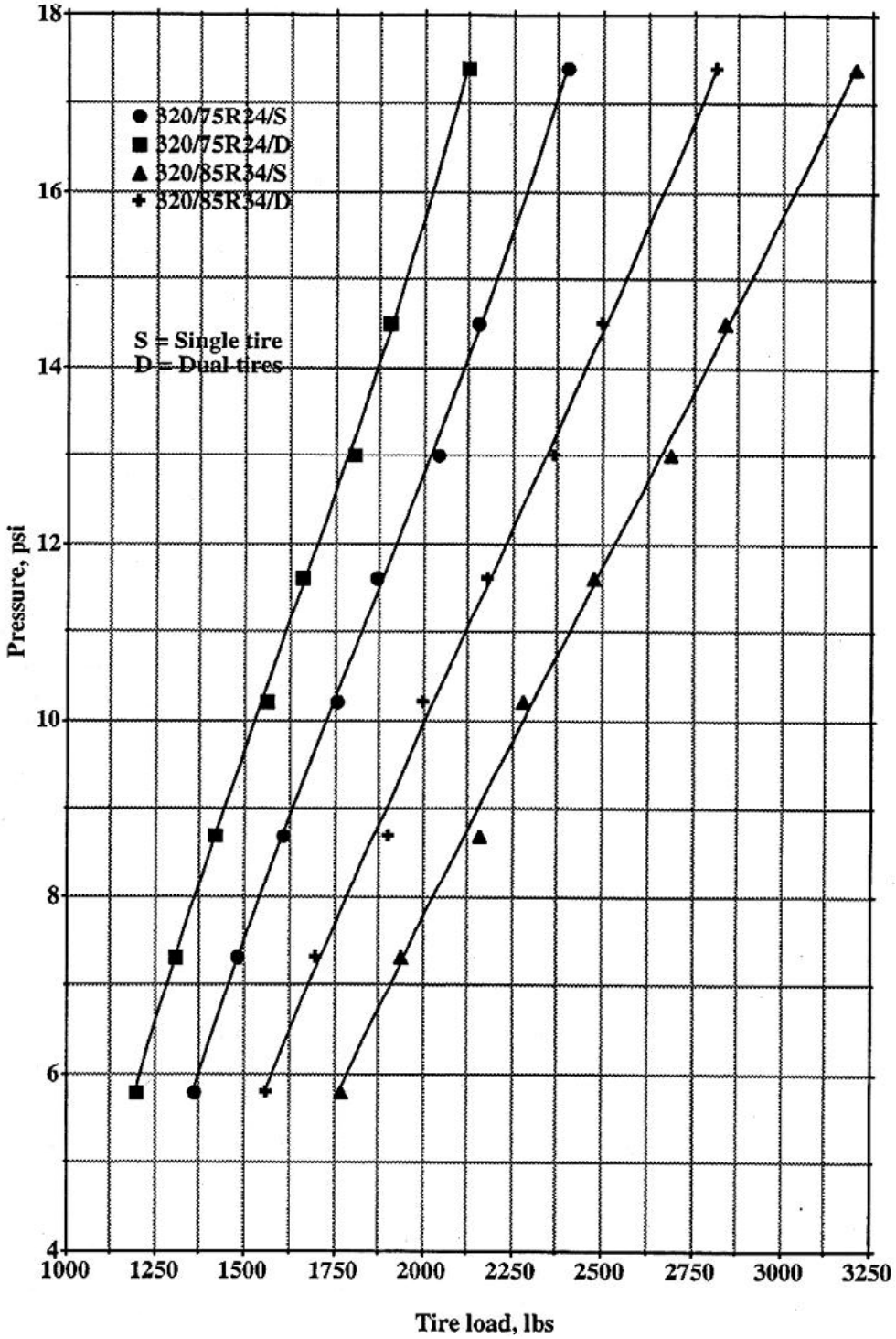

Figure 17. Correct/low pressure selection chart for 320/75R24 and 320/85R34 tires

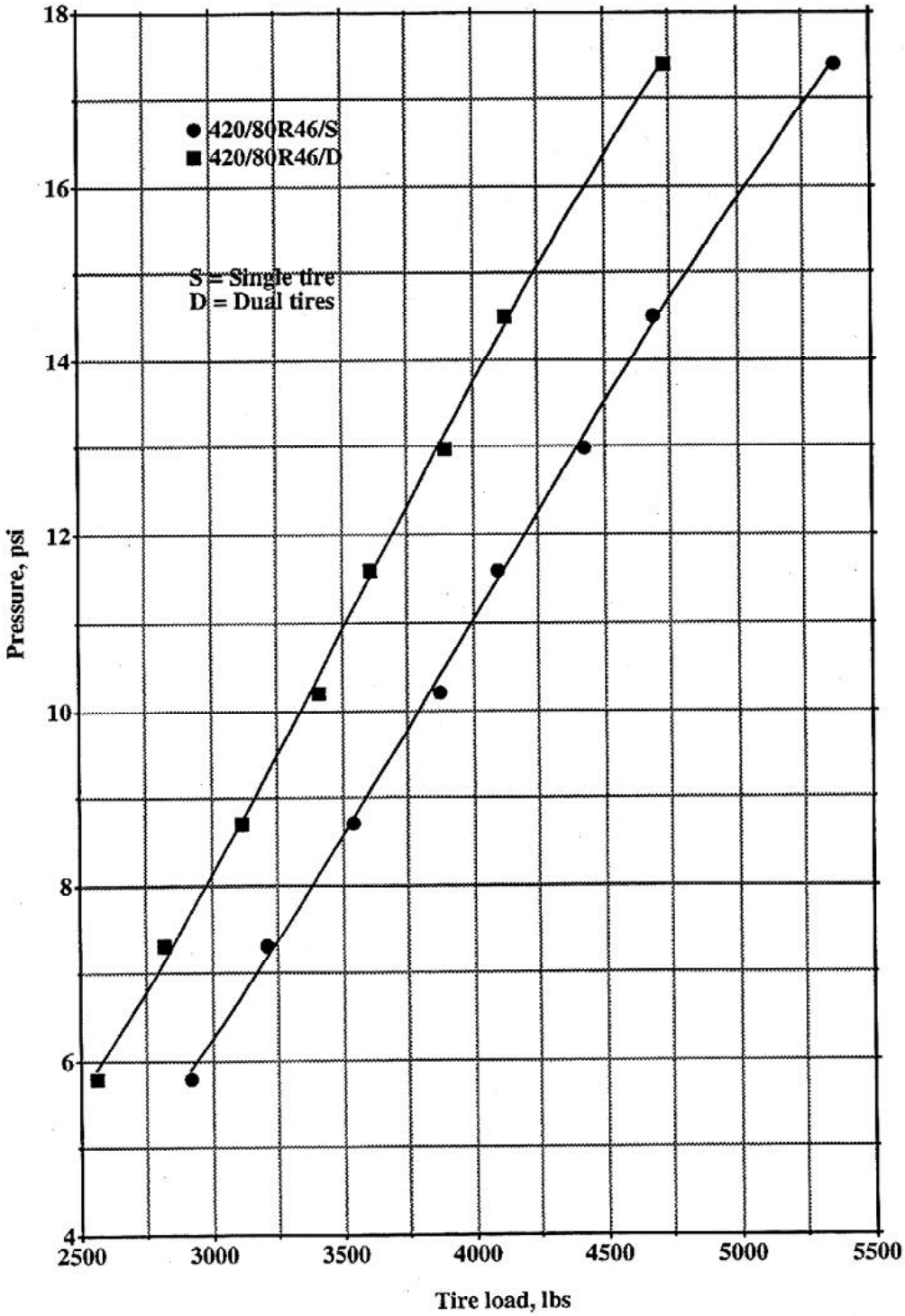

Figure 18. Correct/low pressure selection chart for 420/80R46 tires

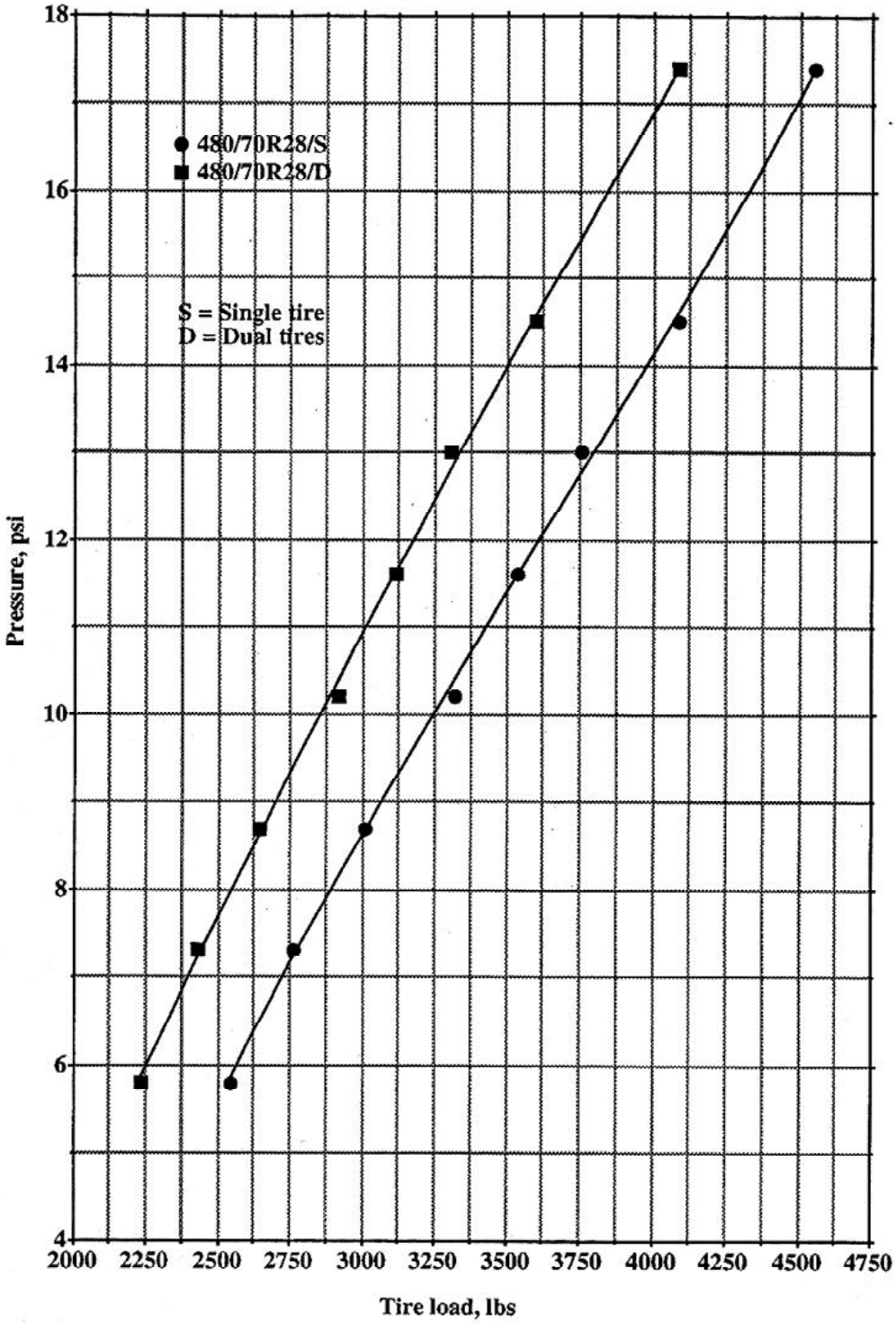

Figure 19. Correct/low pressure selection chart for 480/70R28 tires

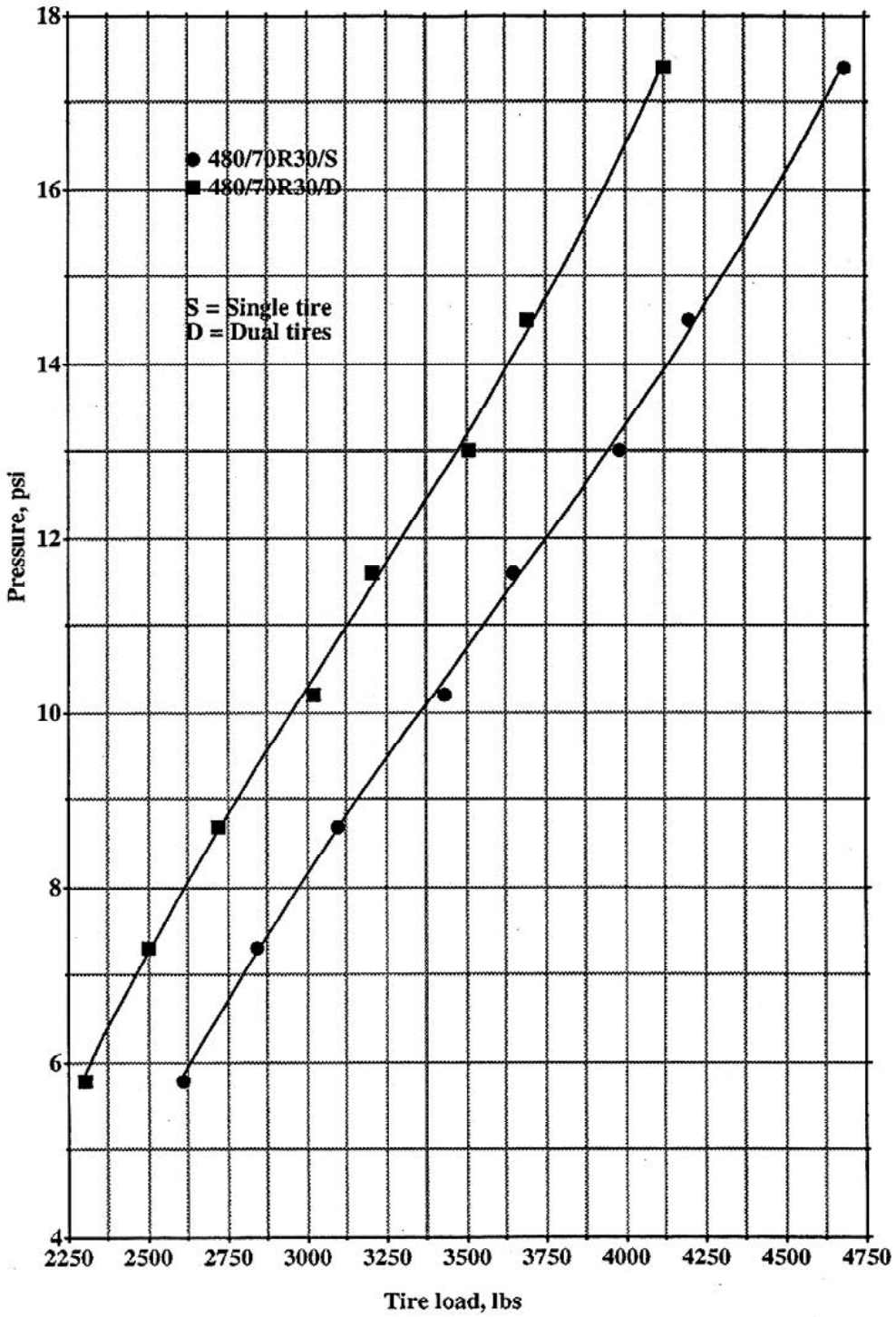

Figure 20. Correct/low pressure selection chart for 480/70R30 tires

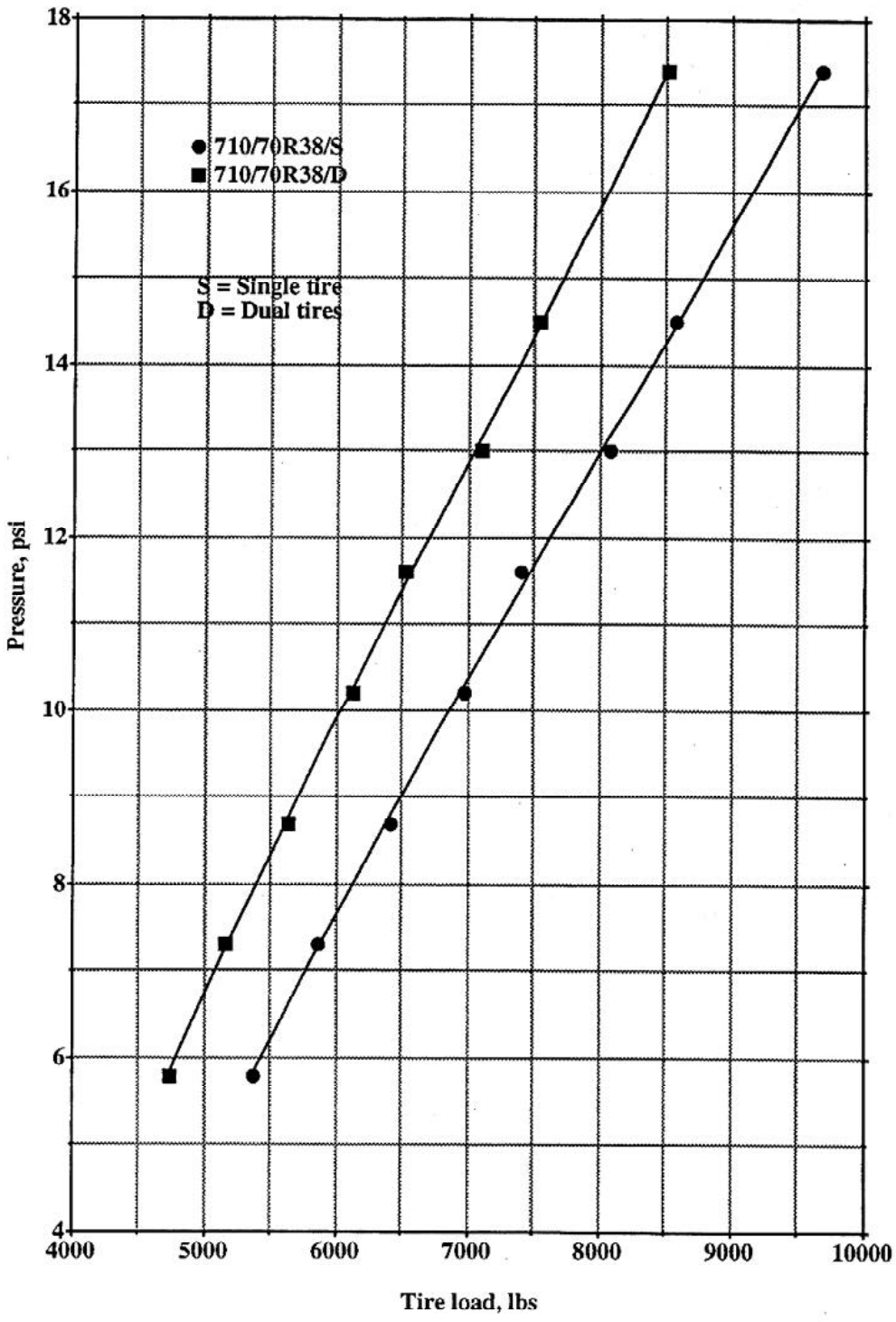

Figure 22. Correct/low pressure selection chart for 710/70R38 tires

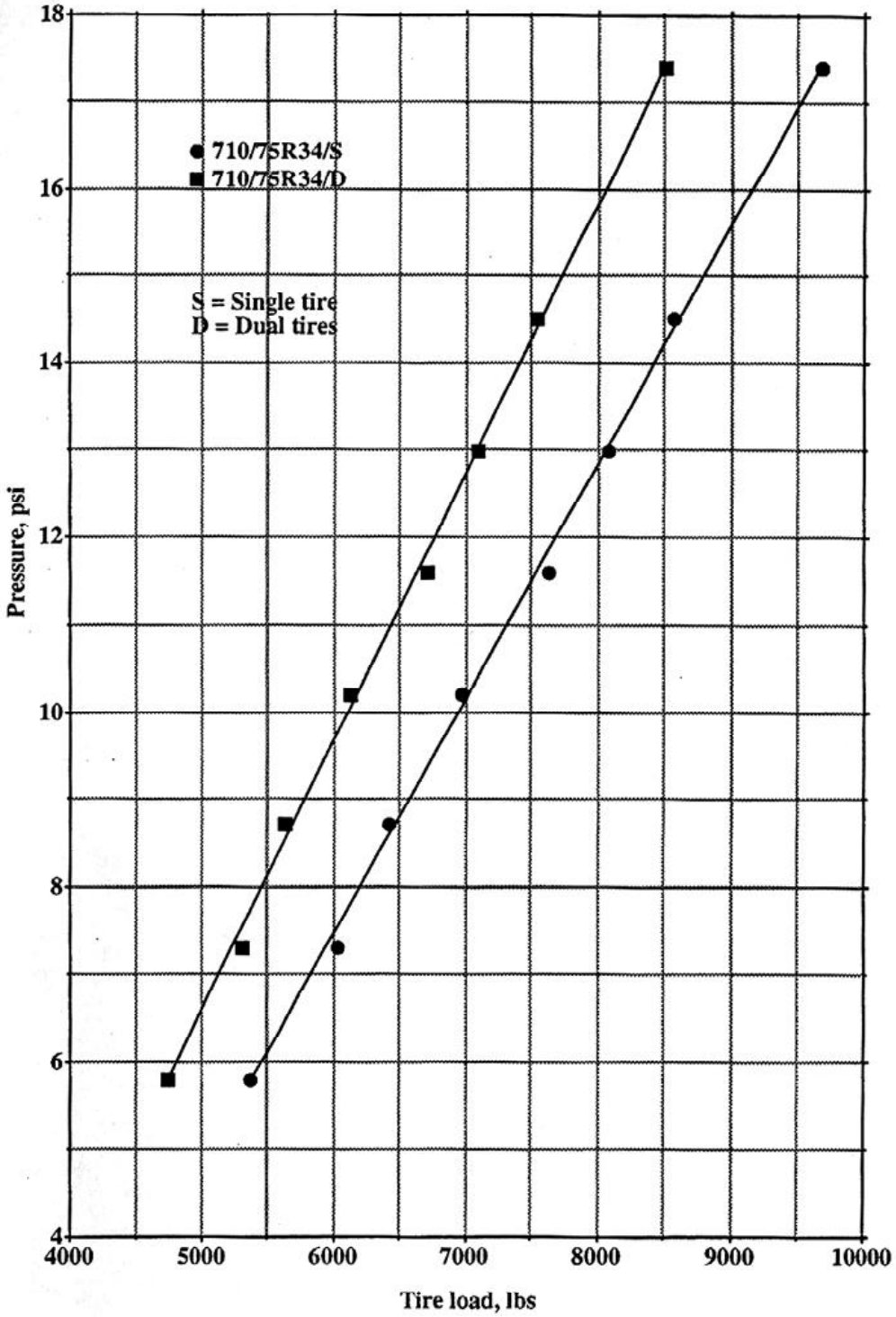

Figure 23. Correct/low pressure selection chart for 710/75R34 tires